# DRAFT Discovery Report

Trempealeau Watershed, HUC 07040005

Buffalo County, Jackson County, Trempealeau County

City of Arcadia, City of Blair, Village of Hixton, City of Independence, Village of Pigeon Falls, Village of Taylor, City of Whitehall Wisconsin

May, 2025



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# I. Study Information

The Federal Emergency Management Agency's (FEMA's) Risk Mapping, Assessment, and Planning (Risk MAP) program helps communities identify and asses their flood risk. Through Risk MAP, FEMA provides information to enhance local Hazard Mitigation Plans (HMPs), improve community outreach, and increase local resilience to floods. Discovery is the process of gathering local knowledge and data for analysis with the goal of initiating a hazard risk assessment and promoting risk discussions within the watershed.

The Discovery process for the Trempealeau River Watershed began with a kickoff meeting on August 15<sup>th</sup>, 2024. The Discovery meetings occurred on Month Day, Year. Details on meetings and stakeholder involvement can be found in the *Discovery Outreach and Engagement Strategy,* community input can be found in the *Summary of Community Risks Identified*, and outcomes can be found in the *Recommendations for Future Risk MAP Project Scope*.

# II. Project Area Community List

The Discovery project for the Trempealeau River Watershed includes 7 communities in Buffalo, Jackson, and Trempealeau Counties. While all communities may be under consideration for a revised FEMA Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM), not all communities will receive them. In this report, current conditions and flood concerns are summarized geographically by county. Community specific concerns and information will be added to the report after the Discovery meeting if desired and applicable.

#### **Project Area Community List**

#### **Buffalo County**

Unincorporated Areas of Buffalo County

#### **Jackson County**

Unincorporated Areas of Jackson County Village of Hixton Village of Taylor

#### **Trempealeau County**

Unincorporated Areas of Trempealeau County City of Arcadia City of Blair City of Independence City of Whitehall Village of Pigeon Falls

## III. Terms and Acronyms

CAC: Community Assistance Contact CAV: Community Assistance Visit CFR: Code of Federal Regulations CID: Community Identification Number **CIS:** Community Information System CRW: Castle Rock Watershed **CLOMA:** Conditional Letter of Map Amendment CLOMR: Conditional Letter of Map Revision CNMS: Coordinated Needs Management Strategy CRS: Community Rating System CRW: Castle Rock Watershed **DNR:** Department of Natural Resources DR: Disaster Declaration Number (alphabetic designation or precursor for) **EM:** Emergency Disaster Declaration FEMA: Federal Emergency Management Agency FIRM: Flood Insurance Rate Map FIS: Flood Insurance Study FMA: Flood Mitigation Assistance **GIS:** Geographic Information System HMA: Hazard Mitigation Assistance HMGP: Hazard Mitigation Grant Program HMP: Hazard Mitigation Plan HUC: Hydrologic Unit Code LiDAR: Light Detection and Ranging LOMA: Letter of Map Amendment LOMR: Letter of Map Revision LOMR-F: Letter of Map Revision Based on Fill LOMR-VZ: Letter of Map Revision V Zone MIP: Mapping Information Platform NRCS: Natural Resources Conservation Service NCDC: National Climatic Data Center OHWM: Ordinary High-Water Mark NOAA: National Oceanic and Atmospheric Administration NWS: National Weather Service PDM: Pre-Disaster Mitigation PMR: Physical Map Revision Risk MAP: Risk Mapping, Assessment, and Planning **RL:** Repetitive Loss SHFA: Special Flood Hazard Area SRL: Severe Repetitive Loss SWCD: Soil and Water Conservation District USACE: United States Army Corps of Engineers USDA: United States Department of Agriculture USGS: United States Geological Survey

# IV. Glossary of Terms

Please note: The Federal Emergency Management Agency (FEMA) is the source for the following terms and definitions, unless cited otherwise.

1-Percent-Annual-Chance Flood: The flood that has a 1-percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood" or "base flood." The base flood is the national standard used by the National Flood Insurance Program (NFIP) and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development.

0.2-Percent-Annual-Chance Flood: A flood that has a 0.2-percent chance of being equaled or exceeded in any given year (also known as a 500-year flood).

Approximate Study: Areas subject to inundation by the 1-percent-annual-chance flood event, generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. An approximate study is represented on a FIRM as a Zone A.

Community Assistance Contacts (CACs): A telephone call or brief visit to an NFIP community for the purpose of establishing or reestablishing contact to determine if any program-related problems exist and to offer assistance.

Community Assistance Visits (CAVs): A visit to a community by a FEMA staff member or staff of a State agency on behalf of FEMA that serves the dual purpose of providing technical assistance to the community and ensuring that the community is adequately enforcing its floodplain management regulations.

Community Rating System (CRS): A voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates in participating communities are discounted to reflect the reduced flood risk resulting from the community actions.

Conditional Letter of Map Revision (CLOMR): A CLOMR is a letter from FEMA that comments on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective BFEs, or the Special Flood Hazard Area (SFHA). The letter does not revise an effective NFIP map; it indicates whether the project, if built as proposed, would be recognized by FEMA. FEMA charges a fee for processing a CLOMR to recover the costs associated with the review.

Conditional Letter of Map Revision Based on Fill (CLOMR-F): A CLOMR-F is FEMA's comment on a proposed project that will be elevated by fill. This process is not for

submitting proposed development that would affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective BFEs, or the SFHA. The letter does not revise an effective NFIP map, but indicates whether the project, if built as proposed, would be recognized by FEMA.

Coordinated Needs Management Strategy (CNMS): The CNMS application is FEMA's inventory of flood hazard studies and flood hazard mapping needs for areas where a flood hazard study is needed. CNMS is beneficial for community officials and FEMA staff in analyzing and depicting flood hazards to enhance understanding of flood risk and make informed decisions on community planning and flood mitigation.

Dam: An artificial barrier that has the ability to impound water, wastewater, or any liquidborne material, for the purpose of storage or control of water (Federal Energy Regulatory Commission). The New York State Department of Environmental Conservation (NYSDEC) uses a classification scale of A to D to assign hazard potential to each of the dam structures contained within the inventory, while dams without a hazard code assignment are considered Class 0 or unclassified hazard potential. The hazard classifications for dams are assigned based on the particular physical characteristics of a dam and its location, may be assigned irrespective of the size of the dam, as appropriate, and are as follows:

- Class A or low hazard dam. A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads such as town or county roads; is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable, or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injury, substantial economic loss, or substantial environmental damage.
- Class B or intermediate hazard dam. A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable, or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected.
- Class C or high hazard dam. A dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable, or telephone infrastructure; or substantial environmental damage; such that the loss of human life or widespread substantial economic loss is likely.

 Class D or negligible or no hazard dam. A dam that has been breached or removed, or has failed or otherwise no longer materially impounds waters, or a dam that was planned but never constructed. Class D dams are considered to be defunct dams posing negligible or no hazard. The department may retain pertinent records regarding such dams.

Disaster Declaration: The President can declare a major disaster for any natural event that is determined to have caused damage of such severity that it is beyond the combined capabilities of State and local governments to respond. A Major Disaster Declaration provides a wide range of Federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work.

Detailed Study: A flood hazard mapping study done using hydrologic and hydraulic methods that produce BFEs, floodways, and other pertinent flood data. Detailed study areas are shown on the FIRM as Zones AE, AH, AO, AR, A99, A1-A30, and in coastal areas as Zones V, VE, and V1-30.

Flood Insurance Rate Map (FIRM): The official map of a community on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information and maps are assembled into an FIS report. The FIS report contains detailed flood elevation data in flood profiles and data tables.

Flood Mitigation Assistance (FMA): The FMA program provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the NFIP on an annual basis. There are three types of FMA grants available, which include (1) planning grants, (2) project grants, and (3) management cost grants.

Hazard Mitigation Assistance (HMA): FEMA's HMA grant programs, which include the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and FMA, provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages.

Hazard Mitigation Grant Program (HMGP): The HMGP provides grants to States or Tribes and local governments (as sub-grantees) to implement long-term hazard mitigation measures after a Major Disaster Declaration.

Hydrologic Unit Code (HUC): The U.S. Geological Survey (USGS) divides and subdivides the area of the United States into successively smaller hydrologic units that are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest

geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique HUC consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. (USGS)

Ice Jams: An ice jam may be defined as an accumulation of ice in a river, stream, or other flooding source that reduces the cross-sectional area available to carry the flow and increases the water-surface elevation. Ice usually accumulates at a natural or manmade obstruction or a relatively sudden change in slope, alignment, or cross-section shape or depth. Ice jams are common in locations where the channel slope changes from relatively steep to mild and where a tributary stream enters a large river.

Light Detection and Ranging (LiDAR): LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses—combined with other data recorded by the airborne system—generate precise, three-dimensional information about the shape of the Earth and its surface characteristics. LiDAR systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility. (NOAA)

Letter of Map Amendment (LOMA): A LOMA is an official amendment, by letter, to an effective NFIP map. A LOMA establishes a property's location in relation to the SFHA. LOMAs are usually issued because a property has been inadvertently identified as being in the floodplain but is actually on natural high ground above the BFE or out as shown on the FIRM. Because a LOMA officially amends the effective NFIP map, it is a public record that the community must maintain. Any LOMA should be noted on the community's master flood map and filed by panel number in an accessible location.

Letter of Map Change (LOMC): LOMC is a general term used to refer to the several types of revisions and amendments to FEMA maps that can be accomplished by letter. They include LOMAs, Letters of Map Revision (LOMRs), and Letters of Map Revision Based on Fill (LOMR-Fs).

Letter of Map Revision (LOMR): A LOMR is FEMA's modification to an effective FIRM or portion of the FIRM. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and, thus, result in the modification of the existing regulatory floodway, the effective BFEs, or the SFHA. The LOMR officially revises the FIRM and sometimes the FIS report. Letter of Map Revision Based on Fill (LOMR-F): A LOMR-F is a FEMA letter amending the effective FIRM for an existing structure or parcel of land that has been elevated by fill.

Levee/Floodwall: A manmade structure designed to contain or control the flow of water. Levees and floodwalls are constructed from earth, compacted soil, or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete.

Mitigation: Any action taken to eliminate or reduce the long-term risk to life and property from natural and technological hazards, including, but not limited to, flooding. Flood mitigation measures include elevation, floodproofing, relocation, demolition, or any combination thereof.

Multi-Frequency Depth Grids: This Flood Risk Product helps communities better understand their flood hazard risk beyond the 1-percent-annual-chance floodplain and provides information useful for developing a Benefit-Cost Analysis by producing grids for the 10-percent (10-year depth), 4-percent (25-year depth), 2-percent (50-year depth), 1-percent (100-year depth), and 0.2-percent-annual-chance (500-year depth) flood events. These grids will be used to create additional analyses that depict the percent-annual chance of flooding and the percent chance of flooding over a 30-year span in the floodplain.

Pre-Disaster Mitigation (PDM): The PDM grant program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was enacted to reduce overall risk to people and structures, while simultaneously reducing reliance on Federal funding in the event of a disaster.

Repetitive Loss (RL) property: An RL property is any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period since 1978. An RL property may or may not be currently insured by the NFIP.

Risk Mapping, Assessment, and Planning (Risk MAP) program: The FEMA Risk MAP program provides communities with flood risk information and tools to support mitigation planning and risk reduction actions.

Severe Repetitive Loss (SRL) property: An SRL property is a single family property (consisting of one to four residences) covered by flood insurance underwritten by the NFIP and has incurred flood-related damage for which four or more separate claim payments have been paid with the amount of each claim payment exceeding \$5,000 and with a cumulative amount of such claim payments exceeding \$20,000; or for which at least two separate claim payments have been made with the cumulative amount of such claims exceeding the market value of the property.

Special Flood Hazard Area (SFHA): SFHAs are high-risk areas subject to inundation by the base (1-percent-annual-chance) flood; they are also referred to as 1-percent-annual-chance floodplains, base floodplains, or 100-year floodplains.

Water-Surface Elevation Grids: When appropriated, this non-regulatory Flood Risk Product is produced during the Flood Risk Review phase to complement the 1-percent-

annual-chance floodplains designated on the FIRMs making the calculated WSEL results more readily available. The WSEL Grid is prepared for the 1-percent-annual-chance storm event and may be produced for a range of other flood events. Using a Geographic Information System (GIS), community officials can easily generate an estimated BFE for interested residents and land developers, and to make critical floodplain management and mitigation decisions.

# V. Executive Summary

In 2023, FEMA funded a Risk MAP Discovery project for the Trempealeau River Watershed (TRW), which consists of 3 counties and 7 communities. Through the Discovery process, FEMA will be able to obtain key insights and data that will lead to greater community resiliency. Stakeholders in the watershed will help FEMA to identify and review existing natural hazard information to prioritize natural hazard information needs for making mitigation decisions. Communities will help to identify critical infrastructure and resources that could be impacted during a natural hazard event.

Comprising significant input from local stakeholders, the TRW Discovery Report describes historical flood risk, existing flood-related data, and local needs concerning FEMA FIS reports and FIRMs. During the outreach process—which involved a kickoff meeting and discussion-based Discovery Meetings—emphasis was placed on opportunities for stakeholders to provide comments, concerns, input for future mapping projects, and ideas for mitigation activities.

The Discovery project was informed by data and resources available at the watershed and county level, as well as local insights from stakeholders at the community level. Using community mapping needs and data collected through the engagement process, as well as additional detailed analysis, a recommended scope of work for the Trempealeau River Watershed was developed. Data collected from community stakeholders can be found in the County Overview sections and the Summary of Community Risks Identified section.

Upon completion of the Risk MAP Discovery phase, FEMA will initiate further data development, prioritize areas for restudy, and begin the process to update maps within the watershed, pending available funding.

# VI. Discovery Overview

The Discovery process is the second phase in FEMA's Risk MAP Project lifecycle (Figure 1). It kicks off with an investigation of existing terrain, flood hazard data, and flood risk data for development of an initial Discovery map (Figure 1). Further data is gathered through stakeholder coordination and is used to refine the map and scope of the Risk MAP project. As a Cooperating Technical Partner, the Wisconsin Department of Natural Resources (WDNR) led the Discovery process for the Trempealeau Watershed. In coordination with FEMA and Wisconsin Emergency Management (WEM), the WDNR gathered data and identified stakeholders. Community officials, Land Information Officers, Emergency Managers, Tribal Officers, State Agencies, and Federal Agencies were identified as stakeholders and invited to participate in the Discovery process.



Figure 1. Risk MAP Project Life Cycle

# VII. Discovery Outreach and Engagement Strategy

In the Trempealeau River Watershed, the Discovery phase of Risk MAP had four major components: (1) Identify stakeholders, (2) gather information from participating communities, (3) support one in-person and virtual Discovery meetings to gather additional information, (4) conduct post-meeting follow-up and engagement.

## i. Stakeholder Identification

Initial stakeholders identified were county chairpersons, village presidents, mayors, clerks, and zoning administrators. The invitation sent out to stakeholders informed those persons that the invitation can be forwarded to local officials or relevant staff who may be interested. Others that have joined the Discovery process have been GIS staff, emergency management, planners, & other local officials.

## ii. Pre-Meeting Information Exchange

As a Pre-Discovery meeting engagement, Wisconsin DNR held a kick-off meeting on August 15<sup>th</sup>, 2024. A formal presentation was given to 16 stakeholders and with questions the meeting lasted an hour. The WDNR presented an overview of the Discovery process including the partnership with FEMA, goals, deliverables, and timeline. The WDNR also gave a brief outline of the Trempealeau Watershed and why it was chosen by FEMA for Discovery. The presentation transitioned into specifics about the upcoming Discovery Meeting. The goal was to let the stakeholders know who will attend, the agenda, and what type of data to bring to the meeting. The call was then open for questions and discussions from stakeholders.

## iii. Discovery Meeting

This section will be updated following the Discovery meeting.

# **VIII. Watershed Characteristics and Geography**

The Trempealeau River Watershed is located in Western Wisconsin and drains 729 square miles, including portions of Buffalo, Jackson, and Trempealeau Counties. The watershed is dominated by Grassland (37%) and agricultural land use (22%), forests (19%), wetlands (13%), urban/developed areas (6%), and other uses (3%) making up the rest. The basin is entirely within the Driftless Area of Wisconsin, and therefore has relatively steep slopes and rapid runoff.

The main stem of the Trempealeau River flows 81 miles across the 55-mile-long watershed. The headwaters are in Jackson County, and it flows southwest to the confluence with the Mississippi River in lower Trempealeau County. There are several main tributaries to the main stem Trempealeau, including: Elk Creek, Pigeon Creek, and Tamarack Creek.

The Watershed has an extensive flood history. Spring floods from snowmelt, moderate precipitation, and ice jams cause road closures and washouts. In the summer, flash flooding spawned by heavy rain and steep terrain has led to evacuations and mudslides. Significant flooding events in 2017 resulted in Federal Disaster Declarations for all three counties in the Trempealeau Watershed. In Buffalo County, four flooding related Federal Disaster Declarations have been declared since 1969, Jackson County has had three since 1990, and Trempealeau County has also had three since 1965. Because of the history and more recent record floods, there have been several mitigation actions and flood control projects within the watershed. This includes flood-retardation structures, culvert replacements, homeowner buyouts, relocations, and structure elevation.



Figure 2. Watershed Location and Land Use

## Dams

According to the Wisconsin Department of Natural Resources Dams database, there are 121 dams within the Trempealeau Watershed. A dam is classified by its size and hazard. A *Large* dam has a structural height of over 6 feet and impounds 50 acre-feet or a structural height of 25 feet or more and impounds more than 15-acre-feet. Every *Large* dam is given a hazard rating based on the potential for loss of life or property damage should the dam fail. A dam is assigned a rating of *High* hazard when its failure would probably put lives at risk. There are 16 *Large* dams in the Trempealeau watershed and 3 of those have a rating of *High* or *Significant* hazard. Locations of these dams can be seen on the discovery map.

## Watershed Boundaries

Watershed boundaries are classified based on hydrologic unit codes (HUC). The TRW is a HUC 8 class with the number 07040005. The numbers are arranged by scale, with the first two numbers representing the region, and the following two numbers each representing the sub-regions, accounting units, and cataloging units, respectively. The CRW shares boundaries with:

- Buffalo-Whitewater Watershed 07040003
- Black Watershed 07040007
- La Crosse-Pine Watershed 07040006

# IX. Watershed Disaster Declarations

In response to disasters, FEMA can issue disaster declarations for Major Disasters (DRs) and Emergency Declarations (EMs).

The President can declare a disaster in Wisconsin after the Governor submits a request for any natural event, fire, flood, or explosion in which the severity of damage is determined to exceed the combined response capabilities of State and local governments. A wide range of Federal assistance programs for individual and public infrastructure can be provided after such a declaration is made, including funds for both emergency and permanent work. Emergency Declarations can be declared by the President after the Governor submits a request for any occasion or instance when the President determines Federal assistance is needed to supplement State and local government efforts in providing emergency services, up to \$5 million dollars.

As of April 2025, there have been a total of 42 FEMA disaster declarations in the CRW dating back to 1965. The number of declarations informed the need for this Discovery effort. The timeline below (Figure 4) shows the 10 most recent flooding declarations in more detail, while the table (Table 1) summarizes all declarations within the watershed (FEMA 2022, Disaster Declarations Summary).

Incident Type	Number of Disaster Declarations	Declaration Date	
Buffalo County			
Severe Storm	6	1975, 1978, 1993, 1998, 2010, 2017	
Flooding	4	1969, 1973, 1992, 2001	
Tornado	1	1965	
Hurricane	1	2005	
Drought	1	1976	
Biological*	2	2020	
Jackson County			
Severe Storm	6	1993, 1998, 2000, 2004, 2010, 2017	
Flooding	3	1992, 2001, 2016	
Tornado	-	-	
Hurricane	1	2005	
Drought	1	1976	

## Table 1. FEMA Disaster Declarations for the TRW

Biological*	2	2020		
Trempealeau County				
Severe Storm	7	1975, 1978, 1993, 1998, 2004, 2010, 2017		
Flooding	3	1969, 1992, 2001		
Tornado	1	1965		
Hurricane	1	2005		
Drought	1	1976		
Biological*	1	2020		

\*Covid-19 Pandemic

Table 2. Tell Wost Rece	III FEMA FIOOD DISASIEI DECIAIALIONS III LIE TRW
2017	DR-4343-WI / Severe Storms and Flooding SEVERE STORMS, STRAIGHT-LINE WINDS, FLOODING, LANDSLIDES, AND MUDSLIDES Buffalo, Jackson, Trempealeau County
2016	DR-4288-WI / Flooding SEVERE STORMS, FLOODING, AND MUDSLIDES Jackson County
2010	DR-1944-WI / Severe Storm SEVERE STORMS AND FLOODING Buffalo, Jackson, Trempealeau County
2004	DR-1526-WI / Severe Storm SEVERE STORMS AND FLOODING Jackson and Trempealeau County
2001	FLOODING, SEVERE STORMS AND TORNADOES Buffalo, Jackson, Trempealeau County
1998	DR-1236-WI / Severe Storm SEVERE STORMS,STRAIGH LINE WINDS, TORNADOES, RAIN, AND FLOODING Buffalo, Jackson and Trempealeau County
1993	DR-994-WI / Severe Storm SEVERE STORMS, TORNADOES & FLOODING Buffalo, Jackson, and Trempealeau County
1992	DR-964-WI / Flood SEVERE STORMS & FLOODING Buffalo, Jackson, and Trempealeau County
1978	DR-559-WI / Severe Storm SEVERE STORMS, FLOODING, HAIL & TORNADOES Buffalo, Trempealeau County
1975	DR-482-WI / Severe Storm HEAVY RAINS, TORNADOES & FLASH FLOODS Buffalo, Trempealeau County

## Table 2. Ten Most Recent FEMA Flood Disaster Declarations in the TRW

# X. Buffalo County Overview

COUNTY POPULATION:	PERSONS PER SQUARE MILE:	LAND USE:
13,317	19	2. Agriculture 3. Grassland
(U.S. CENSUS BUREAU 2020)	(U.S. CENSUS BUREAU 2020)	(WI DNR 2025)
PERCENTAGE OF COUNTY IS FARMLAND:	<b>TOP INDUSTRIES:</b> 1. EDUCATION & HEALTH 2. MANUFACTURING	PRESIDENTIAL DISASTER DECLARATIONS SINCE 1965:
27%	3. RETAIL TRADE	15
(WI DNR 2025)	(U.S. CENSUS BUREAU)	(FEMA 2025)

#### Overview

Buffalo County is bordered by Trempealeau, Pepin, Eau Claire Counties in Wisconsin, and Wabasha and Winona Counties Minnesota. Buffalo County has a total area of 676 square miles. The Mississippi River forms the southern boundary of the county. The total population is 13,317. Close to 11% of the county is in the TRW. The remaining 72% is in the 07040003 HUC8 watershed, and 17% is in the 07050005 HUC8 watershed . The County seat is the City of Alma, with a population of 9,488. The county is largely (forested and rural), with agriculture accounting for 27% of the land use. There is higher population density in the City of Mondovi and the City of Buffalo City are where commercial and industrial activity are concentrated. There are 8,390 acres of water in the county, along with 58 dams including 11 large dams and 1 that have a significant hazard rating.

Presidential disaster declarations for Buffalo County occurred most recently following severe storms, straight-line winds, flooding, landslides, and mudslides in 2017. The flooding event in 2017 was caused by severe thunderstorms and flash flooding.

## Planning

Buffalo County has the following resources for land use planning and flood resiliency:

- Buffalo County Comprehensive Land Use Plan (2013-2033)
- Buffalo County Multi-Hazards Mitigation Plan (2016-2020)
- City of Alma Comprehensive Land Use Plan (2017)
- City of Buffalo City Comprehensive Plan (2020)
- Fountain City Comprehensive Plan (2023)

- City of Mondovi Comprehensive Plan (2008-2028)
- Village of Cochrane Land Use Plan (2013)

**Common Flooding Concerns** 

Section will be updated after the Discovery meeting

Flooding Concerns Shared During Discovery Meeting

Section will be updated after the Discovery meeting

**Common Mitigation Concerns** 

Section will be updated after the Discovery meeting

**Mitigation Concerns Shared During Discovery Meeting** 

Section will be updated after the Discovery meeting

# XI. Jackson County Overview

COUNTY POPULATION: 21,145	PERSONS PER SQUARE MILE: 21.4 (U.S. CENSUS BUREAU 2020)	LAND USE: 1. Forest 2. Agriculture 3. Wetland
(U.S. CENSUS BUREAU 2020)		(WI DNR 2025)
ACRES OF COUNTY FARMLAND: 248,342	<b>TOP INDUSTRIES:</b> 1. MANUFACTURING 2. EDUCATION & HEALTH 3. RETAIL TRADE	PRESIDENTIAL DISASTER DECLARATIONS SINCE 1976: 13
(JACKSON COUNTY 2023)	(U.S. CENSUS BUREAU)	(FEMA 2025)

#### Overview

Jackson County is bordered by Trempealeau, Eau Claire, La Crosse, Clark, Monroe, Wood, and Juneau Counties. Jackson County has a total area of 1,000 square miles. The total population is 21,145. Close to 20% of the county is in the TRW. The remaining 65% is in the 07040007 HUC8 watershed, 8% is in the 07070003 HUC8 watershed, 5% is in the 07040003 HUC8 watershed, and 2% is in the 07050006 HUC8 watershed. The County seat is the City of Black River Falls, with a population of 3,514. The county is largely forested and rural, with agriculture accounting for 16% of the land use. There are 248,342 acres of farmland. There is higher population density in the City of Black River Falls is where commercial and industrial activity is concentrated. There are 667 miles of streams in the county, along with 213 dams including 38 large dams and 4 that have a high/significant hazard rating.

Presidential disaster declarations for Jackson County occurred most recently following severe storms, straight-line winds, flooding, landslides, and mudslides in 2017. The flooding event in 2017 was caused by severe thunderstorms and flash flooding.

## Planning

Jackson County has the following resources for land use planning and flood resiliency:

- Jackson County Comprehensive Plan (2023-2043)
- Jackson County Land and Water Resource Management Plan (2022)
- Black/Buffalo/Trempealeau River Basin Water Quality Management Plan (2002)

- City of Black River Falls Comprehensive Plan (2025-2045)

Common Flooding Concerns Section will be updated after the Discovery meeting Flooding Concerns Shared During Discovery Meeting Section will be updated after the Discovery meeting Common Mitigation Concerns Section will be updated after the Discovery meeting Mitigation Concerns Shared During Discovery Meeting Section will be updated after the Discovery meeting

# XII. Trempealeau County Overview

COUNTY POPULATION: 30,760 (U.S. CENSUS BUREAU 2020)	PERSONS PER SQUARE MILE: 42 (U.S. CENSUS BUREAU 2020)	LAND USE: 1. Forest 2. Agriculture 3. Grassland (WI DNR 2025)
PERCENTAGE OF	<b>TOP INDUSTRIES:</b>	PRESIDENTIAL DISASTER
COUNTY IS	1. MANUFACTURING	DECLARATIONS SINCE
FARMLAND:	2. EDUCATION & HEALTH	1965:
31%	3. RETAIL TRADE	13
(WI DNR 2025)	(U.S. CENSUS BUREAU)	(FEMA 2025)

## Overview

Trempealeau County is bordered by Buffalo, Jackson, Eau Claire, La Crosse Counties in Wisconsin, and Winona County in Minnesota. Trempealeau County has a total area of 742 square miles. The Mississippi River forms the southern boundary of the county. The total population is 30,760. Close to 61% of the county is in the TRW. The remaining 21% is in the 07040007 HUC8 watershed, 16% is in the 07040003 HUC8 watershed, and 2% is in the 07040006 HUC8 watershed . The County seat is the City of Whitehall with a population of 1,645. The county is largely forested and rural, with agriculture accounting for 31% of the land use. There is higher population density in the Cities of Arcadia, Independence and Whitehall where commercial and industrial activity are concentrated. There are # acres of water in the county, along with 114 dams including 15 large dams and 6 that have a significant/high hazard rating.

Presidential disaster declarations for Trempealeau County occurred most recently following severe storms, straight-line winds, flooding, landslides, and mudslides in 2017. The flooding event in 2017 was caused by severe thunderstorms and flash flooding.

#### Planning

Trempealeau County has the following resources for land use planning and flood resiliency:

- Trempealeau County Hazard Mitigation Plan (Expired)
- City of Arcadia Comprehensive Plan (2015)
- City of Blair Comprehensive Plan (2009)

**Common Flooding Concerns** 

Section will be updated after the Discovery meeting

Flooding Concerns Shared During Discovery Meeting

Section will be updated after the Discovery meeting

**Common Mitigation Concerns** 

Section will be updated after the Discovery meeting

**Mitigation Concerns Shared During Discovery Meeting** 

Section will be updated after the Discovery meeting

# XIII. Available Watershed Data Collection

For Discovery, data is collected to get a better understanding of risk in a community and inform recommendations for potential Risk MAP projects. Existing tabular and spatial data was collected for the Trempealeau Watershed from multiple sources and displayed on the Discovery Map, Discovery Report, and/or in the Geodatabase. A list of the data collected, sources, and deliverable is listed in Table 2.

DATA	SOURCE	DELIVERABLE
Community Boundaries	Wisconsin Legislative	Discovery Map
	Technology Services	Geodatabase
	Bureau	
Coordinated Needs	FEMA Region V	Discovery Map
Management Strategy		Geodatabase
(CNMS)		
County Boundaries	Wisconsin Legislative	Discovery Map
	Technology Services	Geodatabase
	Bureau	
DAM Information	Wisconsin DNR Dams	Discovery Map
	Inventory	Geodatabase
Effective SFHA	FEMA NFHL	Discovery Map
		Geodatabase
Flood Insurance Claims	FEMA Community	Discovery Report
Liszand Mitigatian Dian	Information System (CIS)	Dia severe Den ert
Hazard Mitigation Plan		Discovery Report
		Diagovery Man
ice Jams	U.S. Army Corp of	Discovery Map
	Log Jam Database	Geodalabase
Last CAC Date	FEMA CIS	Discovery Report
Last CAV Date	FEMA CIS	Discovery Report
Last CAV Date		Discovery Nepolit
Letters of Map Change		Geodatabase
Maior Roads	Wisconsin DNR	Discovery Map
major reduce		Geodatabase
Mitigation-Acquisition	Wisconsin Emergency	Discovery Map
Parcels	Management	Geodatabase
NFIP Participation	FEMA CIS	Discovery Report
Population	U.S. Census (2020)	Discovery Report
Repetitive Loss	FEMA CIS	Discovery Report
Stream Gages	USGS National	Discovery Map
	Hydrography Dataset	Discovery Report
		Geodatabase
Streams and Rivers	FEMA NFHL	Discovery Map
		Geodatabase
Watershed Boundaries	USGS National	Discovery Map
	Hydrography Dataset	Geodatabase

#### Table 3. Discovery Data for the Trempealeau River Watershed

Note: Please see spatial metadata for more information about data set contribution and source.

# **XIV. Data for Flood Risk MAP Products**

## i. LiDAR Data

Buffalo, Jackson, and Trempealeau Counties LiDAR all meet FEMA's vertical accuracy threshold (FEMA SID #43) for high specification level and are suitable to be used for detailed studies.

Community	Date Acquired
Buffalo County	2023
Jackson County	2022
Trempealeau County	2022

#### Table 4. LiDAR Acquisition Dates

## ii. USGS Gages

The project team identified USGS stream gages within the watershed. The locations are shown on the Discovery Map and a summary is listed in Table 4.

	DESCRIPTION
NOMBER	Pine Creek at Taylor Road Near Taylor W/I
05379187	https://nwis.waterdata.usgs.gov/nwis/inventorv/?site_no=05379187
05270200	Bruce Valley Creek Near Pleasantville, WI
05379288	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379288
05370305	Elk Creek Near Independence, WI
0007 0000	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379305
05370400	Trempealeau River at Arcadia, WI
0337 9400	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379400
05270420	Trout Run at County Trunk Highway J Near Arcadia, WI
00079400	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379430
05270465	Bohris Valley Creek @ Brandhorst Road Near Dodge, WI
05579405	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379465
05270472	Bohris Valley Creek at County Highway P Near Dodge, WI
05379472	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379472
05270500	Trempealeau River at Dodge, WI
05379500	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379500
05270520	Pine Creek at Whistler Pass Road Near Dodge, WI
05379530	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05379530
05290000	Trempealeau River Near Trempealeau, WI
05360000	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=05380000
052702205	Traverse Valley Creek N. Trib. NR Independence, WI
053793305	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=053793305
052702200	Traverse Valley Creek S. Trib. NR Independence, WI
003793300	https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=053793306

#### Table 5. USGS Stream Gages

# XV. Other Available Data and Information

## i. Community Rating System (CRS)

The Community Rating System is a voluntary incentive program that recognize and encourages community floodplain management activities that exceed the minimum NFIP requirements. Currently, none of the communities within the Trempealeau Watershed participate in CRS.

## ii. FEMA Coordinated Needs Management Strategy (CNMS)

There are 284 miles of mapped streams in the Trempealeau Watershed with Special Flood Hazard Areas (SFHA) shown on FEMA Digital Flood Insurance Rate Maps (DFIRM). The majority of SFHA are approximate studies (Zone A), with detail studies (Zone AE) accounting for 62 stream miles. FEMA's Coordinated Needs Management System (CNMS) database (<u>https://msc.fema.gov/cnms/Default.aspx</u>) categorizes flood studies by validation status. The designations reflect an evaluation of the study since the date the FIRM took effect. The evaluation considers land use changes, new/removed bridges or culverts, and account for recent flood events captured by gage data. A Valid status indicates the study meets FEMA's current FIRM mapping standards including using up-to-date engineering methodology and no significant changes since the effective date. When a study does not meet the standards, it is given an Unverified status. According to the database, 103 study miles are Valid and 211 study miles are Unverified.

## iii. Levees

There are two non-accredited Levees in the City of Arcadia along the Trempealeau River. Currently, the City of Arcadia is working with the US Army Corps of Engineers on the design and layout of a levee along the Trempealeau River and Turton Creek.

## iv. Demographics

Populations are listed by community in Table 6. The below map illustrates the population of incorporated communities across the study area.

COUNTY	CID	COMMUNITY	POPULATION (2020)	NFIP Status
BUFFALO	555547	Buffalo County	13,317	PARTICIPATING
	550187	Hixton (Village)	456	PARTICIPATING
JACKSON	550583	Jackson County	21,145	PARTICIPATING
	550190	Taylor (Village)	484	PARTICIPATING
	550439	Arcadia (City)	3,737	PARTICIPATING
	550440	Blair (City)	1,325	PARTICIPATING
	550444	Independence (City)	1,498	PARTICIPATING
INEWIFEALEAU	550446	Pigeon Falls (Village)	381	PARTICIPATING
	555585	Trempealeau County	30,760	PARTICIPATING
	550449	Whitehall (City)	1,645	PARTICIPATING

## Table 6. NFIP Participation Status and Population



Figure 3. Trempealeau River Watershed Population Map

## v. Floodplain Management/Community Assistance Visits

The WDNR State NFIP Coordinator initiates and conducts Community Assistance Visits (CAVs) and Community Assistants Contacts (CACs) as part of the floodplain management program. A CAV consists of reviewing local permitting, evaluation a community's floodplain ordinance, and field tour to assess recent activity within the regulatory floodplain. The NFIP coordinator meets with local officials to discuss the program, potential violations, training opportunities, and recent flood events. A CAC is a less extensive contact between the community and the State NFIP Coordinator. The CAC can be a phone call or brief visit intended to establish or re-establish contact with the community. The purpose is to identify any existing problems and offer assistance if necessary. The most recent CAVs and CACs for NFIP participating communities within the study area are listed in Table 6.

County	Community	CAV Opened	CAV Closed	CAC
Buffalo	Buffalo County	07/21/1994	12/04/2027	06/03/2021
	Jackson County	N/A	N/A	02/25/2015
Jackson	Hixton (Village)	N/A	N/A	06/16/1992
	Taylor (Village)	09/09/1991	12/05/2007	09/09/1991
	Trempealeau County	08/22/2001	05/01/2014	06/01/2021
	Arcadia (City)	N/A	N/A	02/16/2023
Trompoology	Blair (City)	N/A	N/A	N/A
Trempealeau	Independence (City)	N/A	N/A	N/A
	Pigeon Falls (Village)	N/A	N/A	09/30/1993
	Whitehall (City)	N/A	N/A	N/A

#### Table 7. Recent CAV/CACs in the Trempealeau River Watershed

## vi. Regulatory Mapping

The Trempealeau Watershed communities have all had recent countywide maps as part of FEMA's Map Modernization program or Risk MAP. Although the maps are in digital format, they do not necessarily reflect newer hydrologic or hydraulic study information. The maps display both detailed and approximated studies with varying study dates. The countywide DFIRMs are the most recent mapping activity, and the effective dates are listed in Table 6.

 Table 8. Digital Flood Insurance Rate Maps Status

County	Status	Effective Date
Buffalo	Effective	5/3/2010
Jackson	Effective	9/29/2017
Trempealeau	Effective	4/4/2011

## vii. Flood Insurance Policies and Payouts

FEMA's Community Information System (CIS) keeps track of current flood insurance policies for each NFIP participating community. For these communities within the Trempealeau Watershed, there has been more than \$2.7 million paid out towards flood loss claims since 1971 and more \$0.5 million toward repetitive loss properties. Table 8 summarizes the flood insurance characteristics for all participating communities within the study area.

Community	Policies in Force	Policies in A-Zone	Total Premium	Total Coverage	Total Claims	Total Paid Flood Loss	Rep Loss	Total Paid Rep Loss
Arcadia (City)	29	0	\$43,052	\$4,925,000	40	\$1,401,347	2	\$14,989
Blair (City)	1	0	\$999	\$78,000	11	\$36,111	9	\$34,632
Buffalo County	6	1	\$3,654	\$1,543,000	19	\$335,342	1	\$2,680
Hixton (Village)	4	0	\$6,433	\$301,000	4	\$7,214	0	N/A
Independence (City)	1	0	\$909	\$175,000	5	\$6,326	0	N/A
Jackson County	14	1	\$13,685	\$3,268,000	20	\$377,424	4	\$153,609
Pigeon Falls (Village)	1	0	\$636	\$228,000	0	N/A	0	N/A
Taylor (Village)	0	N/A	N/A	N/A	1	\$0	0	N/A
Trempealeau County	10	5	\$11,305	\$1,782,000	51	\$599,177	14	\$300,239
Whitehall (City)	0	N/A	N/A	N/A	1	\$113	0	N/A
Total:	66	7	\$80,673	\$12,300,000	152	\$2,763,054	30	\$506,149

Table 9. Summary of Flood Insurance by Community

# **XVI. Risk MAP Needs and Recommendations**

(Section will be updated in the Final Discovery Report)

## i. Floodplain Studies

While DFIRMs have been produced for all of the counties in the watershed, there are still study and mapping needs. Using CNMS and stakeholder input, the Wisconsin DNR has identified areas where a revised or new study is recommended. The goal is to identify those streams where the communities' flood risk management efforts will most benefit from updated engineering analyses. We have categorized the recommendations by priority level. The final scope of the RiskMAP project moving forward will depend on available funding and resources. High priority recommendations have been added to the Post-Meeting Discovery Map (Appendix D).

## **High Priority**

It is recommended that all Unverified detailed studies (Zone AE) in the watershed be revised. These studies and the applicable study lengths are list in Table 9.

		CNMS Status	
Flooding Source	Study Length (Miles)		Study Type
Elk Creek	1.05	Unverified	AE
Ervin Creek	0.77	Unverified	AE
Reynolds Coulee Creek	0.46	Unverified	AE
Tappen Coulee Creek	0.63	Unverified	AE
Trempealeau River	52.85	Verified/Unverified	AE
Turton Creek	1.34	Unverified	AE

#### Table 10. Mapping Needs, Revised AE Zones

Total: 57.1 miles

#### Table 11. Mapping Needs, Revised A Zones

Flooding Source	Study Length (Miles)	CNMS Status	Study Type
Beaver Creek	3.21	Unverified	А
Borst Valley Creek	4.23	Unverified	A
Bruce Valley Creek	2.35	Unverified	А
Chimney Rock Creek	6.37	Unverified	А
Elk Creek	19.03	Unverified	А
Ervin Creek	2.32	Unverified	А
Fitch Coulee	2.22	Unverified	A
Fly Creek	6.09	Unverified	A

French Creek	10.52	Unverified	A
Fuller Coulee	1.95	Unverified	A
Gomsrud Creek	1.19	Unverified	A
Hawkinson Creek	1.53	Unverified	A
Holcomb Coulee Creek	1.72	Unverified	А
Insteness Valley Creek	1.72	Unverified	А
Judkins Creek	1.33	Unverified	A
Lakes Coulee Creek	4.64	Unverified	A
Moe Coulee	1.50	Unverified	A
North Branch Elk Creek	1.90	Unverified	А
North Branch Trempealeau River	7.84	Unverified	А
North Creek	7.26	Unverified	A
Pigeon Creek	20.46	Unverified	A
Pine Creek	5.12	Unverified	A
Plum Creek	5.33	Unverified	A
Schermerhorn Creek	2.51	Unverified	A
Skutley Creek	4.33	Unverified	A
Sleepy Valley Creek	1.34	Unverified	A
South Branch Trempealeau River	6.49	Unverified	А
Sport Valley Creek	0.58	Unverified	A
Stony Creek	3.43	Unverified	A
Tamarack Creek	19.20	Unverified	A
Tank Creek	5.12	Unverified	A
Tappen Coulee Creek	1.75	Unverified	A
Traverse Valley Creek	5.42	Unverified	A
Trempealeau River	68.29	Unverified	A
Trump Coulee Creek	3.03	Unverified	A
Turi Coulee	0.84	Unverified	A
Vosse Coulee Creek	3.05	Unverified	A
Welch Coulee	3.69	Unverified	A
Unnamed Zone As	16.48	Unverified	A

Total: 265.38 miles

## Table 12. Mapping Needs, New A Zone

Flooding Source	Study Length (Miles)	Study Type

#### Total: miles

#### Table 13. Mapping Needs, Redelineated AE Zones

Flooding Source	Study Length (Miles)	CNMS Status	Study Type

Total: miles

#### **Low Priority**

#### Table 14. Mapping Needs, Low Priority

Flooding Source	Study Length (Miles)	CNMS Status	Effective Study Type	New Study Type

## ii. Mitigation Projects

#### **Table 15. Stakeholder Identified Mitigation Needs**

Location	Discovery Map ID	Subject(s)	Mitigation Interest Comment

## iii. Non-Regulatory Products

Non-regulatory flood risk products provide information to communicate a more complete flood risk in their community. The datasets are meant to go beyond the simple identification of the flood hazards and inform actions that can be taken to reduce flood risk. Depth grids are a non-regulatory product which will not only show where flooding can happen, but also how deep the water will get and how that depth will affect economic losses. The project team recommends creating flood depth grids in the Trempealeau Watershed for all Revised and New AE Zones at multi-frequency intervals. The grids can be used by stakeholders to assess impacts of the flooding for different flood types and plan for mitigation.

# XVII. Appendix

## (Section will be updated in the Final Discovery Report)

Appendix A: Discovery Meeting Stakeholder Sign in Sheets

Appendix B: Stakeholder Comment Forms

Appendix C: Post Meeting Discovery Map